

LISTING OF CLAIMS:

Claims 27 and 35 are currently amended. Please cancel claims 32 and 36-38. Claims 17-26, 28-35 and 39-40 are currently pending.

1-16. (Cancelled)

17. (Previously presented) A method for checking the hermeticity of a closed cavity of at least one micrometric component which includes a structure made on or in a portion of a substrate and a cap fixed onto a zone of the substrate to protect the structure, the cavity being delimited by the inner surface of the cap, the structure, and the zone of the substrate, wherein the method includes steps of:

- placing the micrometric component in a container, said component including inside the cavity an indicator element for checking hermeticity whose optical properties change permanently in the presence of a reactive fluid capable of reacting with the indicator element,
- hermetically sealing the container that contains said component,
- filling the container with a reactive fluid under pressure in order to subject said component to a higher fluid pressure to the pressure in the cavity for a determined time period, the container including means for introducing the reactive fluid, and
- checking the variation in the properties of the indicator element by optical means as a function of the quantity of reactive fluid that has penetrated the cavity and reacted with the indicator element to determine the hermeticity of said cavity.

18. (Previously presented) A method for measuring the hermeticity of a closed cavity of at least one micrometric component which includes a structure made on or in one portion of a substrate and a cap fixed onto a zone of the substrate to protect the structure, the cavity being delimited by the inner surface of the cap, the structure, and the zone of the substrate, wherein the method includes steps of:

- placing the micrometric component in a container, said component including, inside the cavity, an indicator element for checking hermeticity whose electrical properties change permanently in the presence of a reactive fluid capable of reacting with the indicator element,
- hermetically sealing the container that contains said component,

- filling the container with a reactive fluid under pressure in order to subject said component to a higher fluid pressure to the pressure in the cavity for a determined time period, the container including means for introducing the reactive fluid, and
- electrically checking the variation in the properties of the indicator element as a function of the quantity of reactive fluid that has penetrated the cavity and reacted with the indicator element to determine the hermeticity of said cavity.

19. (Previously presented) The method according to claim 17, wherein several wafers that each include several micrometric components made on the same substrate and having a plate of caps fixed to the substrate to enclose each structure of micrometric components, are placed in the container to be placed under pressure by the reactive fluid introduced into the container for a determined time period.

20. (Previously presented) The method according to claim 19, wherein the interior of the container filled with reactive fluid is heated to a temperature higher than the ambient temperature by heating means during the determined time period.

21. (Previously presented) The method according to claim 17, wherein the cavity of the micrometric component or each cavity of micrometric components made on the same substrate of at least one wafer and having a plate of caps fixed to the substrate to enclose each micrometric component structure, includes an inert gas, such as argon, at a pressure close to the atmospheric pressure, and wherein the indicator element is a copper or titanium layer obtained by selective chemical etching or by selective deposition by evaporation under vacuum over one part of the inner surface of each cap or over one part of each zone of the substrate, wherein the container is filled with oxygen as the reactive fluid at a higher pressure than 10 bars so that the optical properties of the copper or titanium layer are altered by oxidation as a function of the quantity of oxygen that has penetrated the cavity during the determined time period.

22. (Previously presented) The method according to claim 21, wherein after the determined time period and before the operation of checking the optical properties of the copper or titanium layer, the container is depressurised and opened, wherein the micrometric component or at least one wafer of micrometric components is removed from the container

and placed on a moving support of a measuring machine for the hermeticity check, and wherein for the hermeticity check, at least one light beam on a determined wavelength, which is emitted by a light source of the measuring machine, is directed towards the copper or titanium layer, so as to be picked up by an image sensor of the measuring machine by reflection of the light beam on the copper or titanium layer or by transmission of the light beam through the micrometric component passing through the copper or titanium layer, the substrate and/or the cap being transparent to the light beam on the determined wavelength.

23. (Previously presented) The method according to claim 22, wherein the structure of each micrometric component is a magnetic microcontactor which includes a first conductive strip, one end of which is secured to the substrate by a conductive foot, and the other end of the first strip is free to move to come into contact with a second conductive strip fixed to the substrate in the presence of a magnetic field, an intermediate part of the first strip having an aperture extending over most of its length, the distance separating the foot of the first strip and one end of the second strip corresponding to the length of the aperture, and wherein the copper or titanium layer, which is at a distance from and opposite the aperture, has a thickness between 10 and 100 nm, and a surface dimension less than the surface dimension of the aperture to define through the aperture first and second measuring zones, wherein, for checking the optical properties of the copper or titanium layer, a first light beam emitted by the light source passes through the micrometric component passing through the first measurement zone through the copper or titanium layer to be picked up by the image sensor of the machine, wherein a second light beam emitted by the light source passes through the micrometric component passing through the second measurement zone without passing through the copper or titanium layer in order to be picked up by the image sensor, and wherein processing means of the measuring machine determine a leakage rate of the micrometric component cavity by comparing the luminous intensity of the first and second beams picked up by the image sensor.

24. (Previously presented) The method according to claim 22, wherein the substrate and/or the cap of each micrometric component is made of silicon, wherein the first and second light beams are emitted by the light source with a wavelength of the order of 1.3 μm .

25. (Previously presented) The method according to claim 22, wherein the substrate and/or the cap of each micrometric component is made of glass, wherein the first and second light beams are emitted by the light source in the near infrared range, close to 850 nm.

26. (Previously presented) The method according to claim 18, wherein the cavity of the micrometric component or each cavity of micrometric components made on the same substrate of at least one wafer and having a plate of caps fixed to the substrate to enclose each micrometric component structure, includes an inert gas, such as argon, at a pressure close to the atmospheric pressure, and wherein the indicator element is a palladium resistor made on one part of each zone of the substrate, insulated conductive paths connecting the resistor and passing through the micrometric component for checking the electrical properties, wherein the container is filled with hydrogen as the reactive fluid at a higher pressure than 10 bars so that the value of the palladium resistor is altered as a function of the quantity of hydrogen that has penetrated the cavity during the determined time period.

27. (Currently Amended) A micrometric component suitable for implementing the method according to claim 17, the component including a structure made on or in one portion of a substrate and a cap fixed to one zone of the substrate to protect the structure, a closed cavity being delimited by the inner surface of the cap, the structure and the zone of the substrate, wherein it includes, inside the cavity, an indicator element for checking hermeticity, whose optical ~~or electrical~~ properties change permanently in the presence of a reactive fluid capable of reacting with the indicator element in order to check the hermeticity of the cavity of said component.

28. (Previously presented) The micrometric component according to claim 27, wherein the cavity includes an inert gas at a pressure close to the atmospheric pressure, and wherein the indicator element is a copper or titanium layer sensitive to oxygen as the reactive fluid, said layer being obtained by selective chemical etching or by selective deposition by evaporation under vacuum over one part of the inner surface of the cap or over one part of the zone of the substrate.

29. (Previously presented) The micrometric component according to claim 28, wherein the thickness of the copper layer is comprised between 10 and 100 nm.

30. (Previously presented) The micrometric component according to claim 29, wherein the structure is a magnetic microcontactor which includes a first conductive strip, one end of which is secured to the substrate by a conductive foot, and the other end of the first strip is free to move to come into contact with a second conductive strip fixed to the substrate in the presence of a magnetic field, an intermediate part of the first strip having an aperture extending over most of its length, the distance separating the foot of the first strip and one end of the second strip corresponding to the length of the aperture, and wherein the copper layer, which is at a distance from and opposite the aperture, has a surface dimension less than the surface dimension of the aperture to define, through the aperture, first and second measuring zones for the passage of light beams for checking hermeticity.

31. (Previously presented) The micrometric component according to claim 27, wherein the substrate and/or the cap are made of glass or silicon.

32. Cancelled.

33. (Previously presented) The method according to claim 18, wherein several wafers that each include several micrometric components made on the same substrate and having a plate of caps fixed to the substrate to enclose each structure of micrometric components, are placed in the container to be placed under pressure by the reactive fluid introduced into the container for a determined time period.

34. (Previously presented) The method according to claim 33, wherein the interior of the container filled with reactive fluid is heated to a temperature higher than the ambient temperature, preferably to a temperature higher than 100°C by heating means during the determined time period.

35. (Currently Amended) A micrometric component suitable for implementing the method according to claim 18, the component including a structure made on or in one portion of a substrate and a cap fixed to one zone of the substrate to protect the structure, a closed cavity being delimited by the inner surface of the cap, the structure and the zone of the substrate, wherein it includes, inside the cavity, an indicator element for checking

hermeticity, whose ~~optical~~ or electrical properties change permanently in the presence of a reactive fluid capable of reacting with the indicator element in order to check the hermeticity of the cavity of said component.

36-38. Cancelled.

39. (Previously presented) The micrometric component according to claim 35, wherein the substrate and/or the cap are made of glass or silicon.

40. (Previously presented) The micrometric component according to claim 35, wherein the cavity includes an inert gas at a pressure close to the atmospheric pressure, and wherein the indicator element is a palladium resistor made over one part of the zone of the substrate, insulated conductive paths connecting the resistor and passing through the micrometric component suitable for checking electrical properties.